22CH4E2:ENERGY, ENVIRONMENT AND SOIL CHEMISTRY

Course Code	22CH4E2	I A Marks	30
No. of Lecture Hours / Week	4	End Exam Marks	70
Total Number of Lecture Hours	60	Total Marks	100
Seminar	-	Exam Hours	03

S.No	COURSE OUTCOMES	PO`S
	The student will be able to	
1	Memorize the basic theory related to sources of energy,water resources ,air and soil pollution.	2,7
2	Comprehend the significance of sources of energy . water resources ,air and need for good quality of soil.	1,2,7
3	Apply the theoretical aspects of sources of energy . water resources ,air and soil quality parameters`	1, 6
4	Analyse the functioning of sources of energy water resources,pollutants in air and soil.	1,7
5	Evaluate the quality parameters of sources of energy, water ,air and soil	1, 7

CO-PO MATRIX

COURSE CODE 22CH4E2	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO1		H					M
	CO2	M	M					L
	CO3	H					M	
	CO4	H						M
	CO5	H						M

UNIT-I

Sources of Energy :Fossil fuels- Nuclear fission and fusion- Solar energy-use of solar energy in space heating and waterheating- production of electricity using solar energy- solar trough collectors- power tower- solar pond- solarenergy for driving vehicles- power from indirect solar energy – Hydropower- wind power- Biomass energy- production of ethanol from biomass- production of methane from biomass- photosynthesis- photo electrochemistryGeothermal energy.

UNIT-II

Water Resources Hydrological cycle: physical and chemical properties of watercomplexation in natural and waste water, Anomalous properties-water pollutants-TypesSources- Heavy metals- metalloids- organic –Inorganic –Biological and Radioactive-Types of reactions in various water bodies including marine environment- Eutrophication- Ground waterPotable water standards. Treatment for portable water.

UNIT-III

Air: Chemical reactions in the atmosphere – Aerosols types- Production and distribution – Aerosols andRadiation – structure and composition of atmosphere- temperature inversion – Global warning- Ozone depletion– Green house effect, “CFC”s- Acid rain.

UNIT-IV

Soil : Composition of soil- lithosphere- inorganic and organic contaminants in the soil- Biodegradation- Nondegrdable waste and its effect on the environment- Bioremediation –of surface soils- Fate and transport of contaminants on soil system– Bioindicators- Soil parameterssoil destruction- Erosion- Soil conservation –Nitrogen pathways and NPK in soil

UNIT-V

Soil pollution: Introduction – soil pollution by industrial wastes. soil pollution byurban wastes, Radioactive pollutants andAgricultural waste- chemical and metallic pollutantsBiological agents – mining - Detrimental effects of soilpollutants – Effects of industrial pollutants- Effects of sewage and domestic wastes- Effects of heavy metals-Effects of radioactive pollutants- Effects of modern agro- technology – Diseases caused by soil pollution – solidwaste management – sources and classification -public Health Aspects – methods of collection- Disposalmethods – potential methods of disposal.

Reference Books:

1. Daniel D.Chiras (1994), Environmental Science, 4th Ed.
2. Environmental Chemistry by W. Moore and J.Moore
3. Environmental chemistry by J.O.M. Bockariss
4. Environmental by BK Sharma
5. Environmental chemistry by SS Dara
6. Environmental chemistry by Mahajan

M.Sc. DEGREE EXAMINATION
FOURTH SEMESTER

22CH4E2: ENERGY,ENVIRONMENT AND SOIL CHEMISTRY

Time: 3 hours **Maximum Marks: 70**

SECTION – A **5X4=20M**

Answer the following questions.

1) (a) Discuss the role of fossil fuels in our daily life. (CO-3,L-3)
(OR)
(b) Explain the following: i). Nuclear fission and ii). Nuclear fusions. (CO-3,L-3)

2) (a) Write a short note on Anamolous properties of water. (CO-2,L-2)
(OR)
(b) List out various types of water pollutant sources. (CO-2,L-2)

3) (a) Write a short note on ozone depletion. (CO-2,L-2)
(OR)
(b) Explain temperature inversion. (CO-2,L-2)

4) (a) Describe inorganic and organic contaminants in the soil. (CO-3,L-3)
(OR)
(b) Write about Bio degradation. (CO-3,L-3)

5) (a) Give an account on soil pollution by industrial wastes. (CO-2,L-2)
(OR)
(b) Write the disadvantages of soil pollution. (CO-2,L-2)

Section –B **5x10=50M**

Unit-1

6) (a) Explain the following i).Hydropower ii). Wind power iii).Bio mass energy. (CO-2,L-2)
(OR)
(b) Write a note on production of methane from bio mass by photosynthesis. (CO-2,L-2)

Unit-2

7) (a) Explain the following i). Eutrophication ii) Treatment of potable water. (CO-3,L-3)
(OR)
(b) Write about physical and chemical properties of water complexation in natural and waste water ? (CO-3,L-3)

Unit-3

8) (a) Write a note on Greenhouse effect. (CO-2,L-2)
(OR)
(b) Explain the following i).Global warming ii). Acid rains (CO-2,L-2)

Unit-4

9) (a) Explain the following and evaluate their role i). Bio indicators ii). Erosion (CO-5,L-5)
(OR)
(b) Write about soil conservation, Nitrogen pathways and NPK in soil. (CO-5,L-5)

Unit-5

10) (a) Write a note on Detrimental effects of soil pollutants and effect of industrial pollutants. (CO-4,L-4).(OR)

(b) Give a detailed account on effects of savage and domestic ways of heavy metals. (CO-4,L-4)

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